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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,748	10/30/2003	Bruce B. Doris	FIS920030264 (00750483AA)	6189
30743	7590	06/02/2005	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			LE, THAO X	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

5/c

Office Action Summary	Application No. 10/695,748	Applicant(s) DORIS ET AL.	
	Examiner Thao X. Le	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-12, 16-19 is/are rejected.
- 7) ☒ Claim(s) 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/30/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9, drawn to a method of making a semiconductor device, classified in class 438, subclass 761.
 - II. Claims 10-19, drawn to a semiconductor device, classified in class 257, subclass 351.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and II are related as process of making and product made.

The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case a structure to adjust carrier mobility in CMOS can be made by implanting oxygen.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with the Applicant's Attorney, Mr. Christofferson, on 05/23/05 a provisional election was made WITH traverse to prosecute the invention of Group II, claim 10-19. Affirmation of this election must be made by applicant in replying to this Office action. Claim 1-9 withdrawn from further

consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. *The restriction requirement was made by Examiner Michael K. Luhrs, see attached interview summary.*

Specification

7. The disclosure is objected to because of the following informalities: specification page 10 line 27, 218 should read 211.

Appropriate correction is required.

Drawings

8. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature recited in claim 1 'source, drain, and gate silicide' must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

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replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 10-12 and 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by US Pub2003/0181005 to Hachimine et al.

Regarding claim 10, Hachimine discloses a structure that adjusts carrier mobility in CMOS transistors in fig. 31 comprising: a substrate 1 [0164], a first transistor (n-ch MISFET) having a gate dielectric 5, gate electrode 6, and source/drain 7/10 [0165], and gate silicide 12 [0167] regions, formed on said substrate 1, a second transistor (p-ch MISFET) having a gate dielectric 5, gate electrode 6, and source/drain 8/11, and gate silicide 12 regions, fig. 31, formed on said substrate 1, a first film 14a providing tensile stress at least at the channel of first transistor, a second film 14b providing compressive stress at least at the channel of second transistor [0168], and a shear force isolation layer 15 [0170] separating said first film 14a and said second film 14b in at least one area, fig. 31.

Regarding claim 11, Hachimine discloses the structure as recited in claim 10 wherein the first and second films can be composed of nitride, oxide, or other material that exhibits either tensile or compressive properties [0168].

Regarding claim 12, Hachimine discloses the structure as recited in claim 11 wherein the first and second stressed films 14a/14b are separated by a shear force isolation layer 15 at all points, fig. 31.

Regarding claim 16, Hachimine discloses the structure as recited in claim 11 wherein the first and second stressed films 14a/14b are separated by a shear force isolation layer 5 at selected areas.

Regarding claim 17, Hachimine discloses the structure as recited in claim 16 wherein the first stressed film 14a, closer to the substrate than the second stressed film 14b, fully surrounds the NMOS transistor, fig. 31.

Regarding claim 18, Hachimine discloses th structure as recited in claim 17 wherein said first stressed film 14a is the only separation between the nMOS transistor and said second stressed film 14b, fig. 1.

Regarding claim 19, Hachimine discloses the structure as recited in claim 17 wherein said second stressed film 14b surrounds the oxide liner 15 at the sides of the PMOS transistor gate electrode 6 with the top of the gate directly engaged with said second stressed film 14b, fig. 31.

Allowable Subject Matter

11. Claims 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record neither anticipated nor rendered obvious all the limitations of claim 13 including 'the first stressed film, closer to the substrate than the second stressed film, does not fully surround the nMOS transistor, but rather the sides only, while the remaining surfaces of the nMOS transistor are contacted by said shear force isolation layer'.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, consisting of several horizontal strokes and a vertical line, appearing to read 'Thao X. Le'.

Thao X. Le
Patent Examiner
25 May 2005